

REMARKS

Claims 1-11 are pending herein. Claims 1-8 have been amended hereby for clarification purposes and to correct matters of form. The "no more than 10 μ m" limitation in claim 1 is supported on page 5, lines 26-29 of the original specification. New claims 10 and 11 have been added hereby. Attached hereto as pages 8-9, pursuant to Rule 1.121(c)(1)(ii), is a marked-up version of the amended claims. Applicants respectfully submit that no new matter has been added.

1. Applicants appreciate the Examiner indicating that claims 2 and 4 would be allowable if rewritten in independent form. Accordingly, new independent claim 10 has been added to recite the subject matter of original claim 2 in independent form, and new dependent claim 11 has been added to recite the subject matter of original claim 4. Applicants respectfully submit that at least claims 10 and 11 are in condition for allowance.

2. The objections to the drawings set forth in paragraphs 1 and 2 of the Office Action are noted, but deemed moot in view of the substitute specification submitted herewith.

With respect to paragraph 3 of the Office Action, the PTO suggested that the reference character "L" should read "x" in Fig. 1(a) and Fig. 2(a). Applicants respectfully submit that the reference letter "x" refers to a "recess depth that the end face of the peripheral adhesive B is recessed with respect to the end face of the fiber" (substitute specification, page 4, lines 13-14). Applicants agree that the reference letter "L" shown in Fig. 1(a) should be changed to "x" as the PTO suggested. On the other hand, Applicants respectfully submit that the reference letter "L" in Fig. 2(a) should not be changed to "x," and should instead be changed to "y." That is, the distance "L" in Fig. 2(a) actually represents the distance that the end face of the peripheral adhesive is recessed with respect to the end face of the fiber array. Page 5, lines 3-4 of the substitute specification show that the specification has been amended to designate this distance as "y."

Accordingly, reference character "L" of Fig. 1(a) has been changed to "x" and reference character "L" of Fig. 2(a) has been changed to "y" in the Submission of Proposed Drawing Amendments filed herewith.

In view of the foregoing, Applicants respectfully request that the above objections be reconsidered and withdrawn.

3. The objection to the disclosure set forth in paragraph 4 of the Office Action is noted, but is also deemed moot in view of the substitute specification filed herewith. Applicants respectfully note, however, that the Examiner's suggested change for page 10, line 1 of the original specification was not made, and instead, the word "module" has been changed to read --moduli-- on page 9, line 8 of the substitute specification filed herewith.

Accordingly, Applicants respectfully request that the above objection be reconsidered and withdrawn.

4. The objection to claims 1-9 are noted, but are deemed moot in view of the rewritten claims submitted above. Accordingly, Applicants respectfully request that the above objection be reconsidered and withdrawn.

5. The §112, second paragraph rejection of claim 6 is noted, but deemed moot in view of the substitute specification filed herewith. That is, the specification has been amended to read that "the end face of the peripheral adhesive B is recessed a distance y, which is at most 10 μ m, with respect to the end faces of the fiber array" on page 5, lines 3-4 of the substitute specification. Support for this change is found in the following sentence of the substitute specification on page 5, lines 4-7 (this sentence is also supported in the original specification).

For at least the foregoing reasons, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

6. Claims 1 and 5 were rejected under §102(b) over Ichiki et al. To the extent that this rejection might again be applied against the rewritten claims submitted above, it is respectfully traversed.

Independent claim 1 recites a fiber array housing a stripped fiber in a V-groove of a V-groove substrate comprising a fiber fixing substrate fixing the stripped fiber, and a peripheral adhesive disposed around the stripped fiber. An end face of the peripheral

adhesive is recessed no more than 10 μm with respect to the end face of the fiber. Dependent claim 5 recites that the end face of the fiber is flush with the end face of the fiber array or protrudes therefrom.

Applicants respectfully submit that there is no disclosure or suggestion in Ichiki et al. of an end face of the peripheral adhesive being recessed a distance of no more than 10 μm with respect to the end face of the fiber. In fact, applicants respectfully submit that there is no disclosure of the distance between the adhesive end face and the fiber end face in Ichiki et al.

In view of the rewritten claims submitted above and for at least the foregoing reasons, Applicants respectfully submit that claims 1 and 5 define patentable subject matter over Ichiki et al. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

7. Claims 1, 3 and 5-9 were rejected under §103(a) over Hirai et al. in view of Ichiki et al. To the extent that this rejection might against be applied against the rewritten claims submitted above, it is respectfully traversed.

Independent claim 1 is discussed above. In the Office Action, the PTO admits that Hirai et al. lack a fiber fixing substrate fixing the stripped fiber. In an attempt to overcome the admitted deficiency of Hirai et al., the PTO relied upon Ichiki et al. to support the assertion that it would have been obvious to one of skill in the art to provide a fiber fixing substrate according to Ichiki et al. to fix the stripped fibers of the fiber array disclosed in Hirai et al. Applicants respectfully submit, however, that the PTO's assertion is incorrect.

Applicants respectfully submit that the deficiency of Ichiki et al., noted in section 6, *supra*, is not overcome by the primary reference. Since the secondary reference cannot overcome the admitted deficiency of the primary reference due to the above-mentioned deficiency of the secondary reference¹ itself, Applicants respectfully submit that one of ordinary skill in the art could not possibly have arrived at the present invention in view of the applied references.

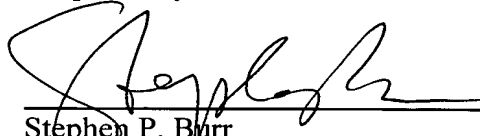
¹Applicants respectfully submit that there is no disclosure or suggestion in Ichiki et al. of an end face of the peripheral adhesive being recessed no more than 10 μm with respect to an end face of the fiber, as recited in pending claim 1.

In view of the rewritten claims submitted above and for at least the foregoing reasons, Applicants respectfully submit that all claims pending herein define patentable subject matter over the art of record. Accordingly, Applicants respectfully request that the above rejection be reconsidered and withdrawn.

If the Examiner believes that contact with Applicants' attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicants' attorney at the phone number noted below.

The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,



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1. (Amended) A fiber array housing a stripped fiber in a V-groove of a V-groove substrate comprising;
a fiber fixing substrate fixing the said stripped fiber; and
a peripheral adhesive ~~B~~-disposed around the said stripped fiber;
wherein an end face of the said peripheral adhesive ~~B~~-is recessed no more than 10 μm with respect to an end face of the said fiber.
2. (Amended) The fiber array according to claim 1, wherein a recess depth x that the said end face of the said peripheral adhesive ~~B~~-is recessed with respect to the said end face of the said fiber is related to a water absorption ratio ϕ of the said peripheral adhesive and a length L over which the said optical fiber is adhered to the said V-groove by the equation $x = 0.1 \times (\phi \times L) / 2$.
3. (Amended) The fiber array according to claim 1, wherein a recess depth x that the said end face of the said peripheral adhesive ~~B~~-is recessed with respect to the said end face of the said fiber is at least 0.1 μm.
4. (Amended) The fiber array according to claim 2, wherein a recess depth x that the said end face of the said peripheral adhesive ~~B~~-is recessed with respect to the said end face of the said fiber is at least 0.1 μm.
5. (Twice Amended) The fiber array according to claim 1, wherein the end said face of the said fiber is flush with the said end face of the said fiber array or protrudes therefrom.
6. (Twice Amended) The fiber array according to claim 3, wherein the said end face of the said peripheral adhesive ~~B~~-is recessed at most 10 μm from the said end face of the said fiber array.

**VERSION WITH MARKINGS TO SHOW CHANGES MADE
CLAIMS**

7. (Twice Amended) The fiber array according to claim 1, wherein ~~the~~ said peripheral adhesive ~~B~~ has a Young's modulus of at least 0.03GPa.

8. (Amended) A method for fabricating a fiber array ~~in accordance~~ with ~~according to~~ claim 1, wherein ~~the~~ said end face of ~~the~~ said peripheral adhesive ~~B~~ is recessed with respect to end faces of ~~the~~ said fibers, comprising the steps of:

assembling said fiber array;

after ~~first~~ polishing an end face of ~~the~~ said assembled fiber array; and;

then ashing or etching ~~the~~ said end face of said fiber array at which the said end face of ~~the~~ said peripheral adhesive ~~B~~ and ~~the~~ said end faces of the said fibers are located.

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ABSTRACT OF THE DISCLOSURE

The present invention provides a fiber array, in which light reflections caused by exfoliation of the end face adhesive due to volume increases of a peripheral adhesive disposed around the fibers are prevented. Stripped fibers are positioned such that they protrude with respect to an end face of a V-groove substrate provided with V-grooves, and the peripheral adhesive is formed flush with the end face of the V-groove substrate without protruding. Then, after being subjected to high temperature and high humidity, the peripheral adhesive swells and expands in the longitudinal direction, so that it protrudes in outward direction from the end face of the V-groove substrate and the end face of the fiber array, but the tip of the peripheral adhesive does not swell beyond the tips of the stripped fibers, so that it does not exert any stress leading to exfoliation at the coupling face with the adhesive.

SUBSTITUTE ABSTRACT

ABSTRACT OF THE DISCLOSURE

The present invention provides a fiber array, in which light reflections caused by exfoliation of the end face adhesive due to volume increases of a peripheral adhesive ~~B~~ disposed around the fibers are prevented. ~~Fig. 1(a) shows an initial connection state.~~ Stripped fibers are positioned such that they protrude with respect to an end face ~~1a~~ of a V-groove substrate ~~1~~ provided with V-grooves ~~7~~, and the peripheral adhesive ~~B~~ is formed flush with the end face ~~1a~~ of the V-groove substrate ~~1~~ without protruding. Then, after being subjected to high temperature and high humidity, the peripheral adhesive ~~B~~ swells and expands in the longitudinal direction, so that it protrudes in outward direction from the end face ~~1a~~ of the V-groove substrate ~~1~~ and the end face of the fiber array as shown in ~~Fig. 1(b)~~, but the tip of the peripheral adhesive ~~B~~ does not swell beyond the tips of the stripped fibers, so that it does not exert any stress leading to exfoliation at the coupling face with the adhesive ~~A~~.